



LONDON- WEST MIDLANDS ENVIRONMENTAL STATEMENT

Volume 5 | Technical Appendices

CFA21 | Drayton Bassett, Hints and Weeford

Data appendix (LQ-001-021)

Land quality

November 2013

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Department for Transport

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Appendix LQ-001-021

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Contents

Appendix LQ-001-021	i
1 Introduction	5
2 Engagement	6
3 Detailed risk assessment	7
4 Inspections notes and other site data	41
5 Geological SSSI and local geological sites	42
6 Mining and minerals data	43

List of tables

Table 1: Engagement on land quality issues undertaken for Drayton Bassett, Hints and Weeford	6
Table 2: Detailed risk assessment for areas assessed as potentially posing a contaminative risk for the Proposed Scheme	7
Table 3: 21-02 Infilled pond baseline CSM and qualitative risk assessment	8
Table 4: 21-02 Infilled pond construction CSM and qualitative risk assessment	9
Table 5: 21-02 Infilled pond post-construction CSM and qualitative risk assessment	10
Table 6: 21-02 Infilled pond significance of effect assessment	11
Table 7: 21-10 White House Farm with associated former tanks baseline CSM and qualitative risk assessment	12
Table 8: 21-10 White House Farm with associated former tanks construction CSM and qualitative risk assessment	13
Table 9: 21-10 White House Farm with associated former tanks post-construction CSM and qualitative risk assessment	14
Table 10: 21-10 White House Farm with associated former tank significance of effect assessment	15
Table 11: 21-11 Buck's Head Farm with associated former tank baseline CSM and qualitative risk assessment	16
Table 12: 21-11 Buck's Head Farm with associated former tank construction CSM and qualitative risk assessment	17
Table 13: 21-11 Buck's Head Farm with associated former tank post-construction CSM and qualitative risk assessment	18
Table 14: 21-11 Buck's Head Farm with associated tank significance of effect assessment	19
Table 15: 21-12 Packington Moor Farm with former sheep dip baseline CSM and qualitative risk assessment	20

Table 16: 21-12 Packington Moor Farm with former sheep dip construction CSM and qualitative risk assessment	21
Table 17: 21-12 Packington Moor Farm with former sheep dip post-construction CSM and qualitative risk assessment	22
Table 18: 21-12 Packington Moor Farm with former sheep dip significance of effect assessment	23
Table 19: 21-14 Garage baseline CSM and qualitative risk assessment	24
Table 20: 21-14 Garage construction CSM and qualitative risk assessment	25
Table 21: 21-14 Garage post-construction CSM and qualitative risk assessment	26
Table 22: 21-14 Garage significance of effect assessment	27
Table 23: 21-15 Whittington Heath baseline CSM and qualitative risk assessment	28
Table 24: 21-15 Whittington Heath construction CSM and qualitative risk assessment	29
Table 25: 21-15 Whittington Heath post-construction CSM and qualitative risk assessment	30
Table 26: 21-15 Whittington Heath significance of effect assessment	31
Table 27: 21-15 Whittington Barracks baseline CSM and qualitative risk assessment	32
Table 28: 21-15 Whittington Barracks construction CSM and qualitative risk assessment	34
Table 29: 21-15 Whittington Barracks post-construction CSM and qualitative risk assessment	36
Table 30: 21-15 Whittington Barracks significance of effect assessment	38

1 Introduction

1.1.1 The land quality appendices for the Drayton Bassett, Hints and Weeford community forum area (CFA) comprise:

- a summary of engagement undertaken (Section 2);
- detailed risk assessment (Section 3);
- inspection notes and other site data (Section 4);
- geological sites of special scientific interest (SSSI) and local geological sites (Section 5); and
- mining and minerals data (Section 6).

1.1.2 Maps referred to throughout the land quality appendix are contained in the Volume 5 land quality map book.

2 Engagement

2.1.1 Table 1 sets out the local authorities and other organisations that have been engaged with during the preparation of the land quality section of the environmental impact assessment (EIA) for the Drayton Bassett, Hints and Weeford study area, the types of information that have been provided to the assessment team and any specific concerns of those engaged with.

Table 1: Engagement on land quality issues undertaken for Drayton Bassett, Hints and Weeford

Local authority or other organisation	Information provided and/or specific concerns
Lichfield District Council	Consulted for information on land contamination (via email 15 April 2013). The council confirmed that it had no records of additional potentially contaminated areas.
Staffordshire County Council	Meeting held on 13 March 2013 to discuss information received digitally in November 2012 on mineral sites (i.e. Mineral Safeguarding Areas and Mineral Consultation Areas within the study area of the Proposed Scheme) within the study area.
Environment Agency	Consulted for information on landfill sites within the study area (May 2013). Information received via email July 2013.

3 Detailed risk assessment

3.1.1 This appendix presents assessments for the areas assessed as potentially posing a contaminative risk for the Proposed Scheme. The following data are presented for each area:

- baseline risk assessment;
- construction risk assessment;
- post-construction risk assessment; and
- assessment of temporary (construction) and permanent (post-construction) effects.

3.1.2 The sites assessed in this study area are set out in Table 2.

Table 2: Detailed risk assessment for areas assessed as potentially posing a contaminative risk for the Proposed Scheme

Site reference	Name	Table nos.
21-02	Infilled Pond	Tables 3-6
21-10	White House Farm	Tables 7-10
21-11	Buck's Head Farm	Tables 11-14
21-12	Packington Moor Farm	Tables 15-18
21-14	Garage	Tables 19-22
21-15	Whittington Heath	Tables 23-26
22-16	Whittington Barracks	Tables 27-30

3.1.3 Contaminant types included within the risk assessments are based on the Priority Contaminants Report CLR 8¹. Although this report has been withdrawn by the Environment Agency, there has been no subsequent authoritative document to replace it.

3.1.4 The remainder of this section presents the risk assessment for the sites set out in Table 2.

¹ DEFRA and Environment Agency (2002), *Contaminated Land Research Report (CLR) 8: Potential Contaminants for the assessment of Land Contamination*.

Appendix LQ-001-021 | Detailed risk assessment

Table 3: 21-02 Infilled pond baseline CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Infilled Pond Existing contaminants in the soils and groundwater at the site, potentially including but not limited to a range of inorganic and organic contaminants, leachate and ground (landfill) gas.	Off-site residents	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating ground gas and volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Controlled waters - Principal bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Principal aquifer	Unlikely	Medium	Low
	Controlled waters - Black-Bourne Brook – ponds	Lateral migration of contaminants in groundwater and discharge as base flow	Unlikely	Minor	Very low
		Direct run-off from site	Unlikely	Minor	Very low
	Property - buildings, infrastructure, their foundations and services	Direct contact of property with contaminants in soil and surface water/groundwater	Low likelihood	Negligible	Very low
		Accumulation of and exposure to explosive ground gases	Unlikely	Medium	Low
Main risk					Low

Description

An infilled pond is situated adjacent to the area of land required to construct the Proposed Scheme where the Proposed Scheme will be constructed in cutting. The infilled pond is approximately 120m from the edge of the cutting. The pond is adjacent to proposed highway works on Rock Hill road and is unlikely to be disturbed. The pond is situated approximately 250m to the east of a residential property called The Lodge, off Rock Hill. A realistic and worst-case scenario is assumed that the pond was manually infilled with waste and a full range of contaminants including leachate and ground (landfill) gas are associated with the infilled ground. The nearest surface waters within 250m of the infilled pond are Black-Bourne Brook to the south and ponds to the north and west. Bedrock underlying the areas of the infilled pond is classified as a Principal aquifer.

Table 4: 21-02 Infilled pond construction CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at construction with mitigation
Infilled Pond Existing contaminants in the soils and groundwater at the site, potentially including but not limited to a range of inorganic and organic contaminants, leachate and ground (landfill) gas.	Off-site residents	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating ground gas and volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Controlled waters - Principal Bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Principal aquifer	Unlikely	Medium	Low
		Lateral migration of contaminants in groundwater and discharge as base flow	Unlikely	Minor	Very low
	Controlled waters - Black Bourne Brook and ponds	Direct run-off from site	Unlikely	Minor	Very low
		Property - buildings, infrastructure, their foundations and services	Low likelihood	Negligible	Very low
		Accumulation of and exposure to explosive ground gases	Unlikely	Medium	Low
Main risk					Low

The above risk assessment assumes that the below mitigation measures will be applied during construction:

- a ground investigation is unlikely to be required prior to construction;
- it is unlikely that remediation will be required as disturbance of the infilled pond is not anticipated. However, should contamination have migrated as far as the Proposed Scheme and be encountered during construction this will be removed or remediated;
- during construction standard mitigation procedures will be in place in accordance with the Code of Construction Practice (CoCP).

Note

Construction workers have not been included in this assessment.

Appendix LQ-001-021 | Detailed risk assessment

Table 5: 21-02 Infilled pond post-construction CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction with mitigation
Infilled pond Existing contaminants in the soils and groundwater at the site, potentially including but not limited to a range of inorganic and organic contaminants, leachate and ground (landfill) gas.	Off-site residents	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating ground gas and volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Controlled waters - Principal bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Principal aquifer	Unlikely	Medium	Low
	Controlled waters - Black Brook – ponds	Lateral migration of contaminants in groundwater and discharge as base flow	Unlikely	Minor	Very low
		Direct run-off from site	Unlikely	Minor	Very low
	Property - buildings, infrastructure, their foundations and services	Direct contact of property with contaminants in soil and surface water/groundwater	Low likelihood	Negligible	Very low
		Accumulation of and exposure to explosive ground gases	Unlikely	Medium	Low
Main risk					Low

Note

It is considered unlikely that any potential contamination from the infilled pond will be encountered and disturbed so the risks are considered to remain the same as at baseline.

Table 6: 21-02 Infilled pond significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of adjacent human receptors (residents) to contamination by direct contact, ingestion and inhalation of contaminants in windblown, soil-derived dust	Low	Low	Low	Negligible	Negligible
Exposure of adjacent human receptors (residents) to contamination by direct contact and ingestion of contaminants in migrating contaminated water	Very low	Very low	Very low	Negligible	Negligible
Exposure of adjacent human receptors (residents) to contamination by inhalation of migrating ground gas and volatile vapours from contaminated soil/water	Low	Low	Low	Negligible	Negligible
Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Principal aquifer	Low	Low	Low	Negligible	Negligible
Lateral migration of contaminants in groundwater and discharge to surface waters as base flow	Very low	Very low	Very low	Negligible	Negligible
Discharge of contaminants to surface water by direct run-off from site	Very low	Very low	Very low	Negligible	Negligible
Direct contact of property with contaminants in soil and surface water/groundwater	Very low	Very low	Very low	Negligible	Negligible
Migration to and accumulation of ground-gas in property	Low	Low	Low	Negligible	Negligible
Main risk	Low	Low	Low		
Overall significance				Negligible	Negligible

Appendix LQ-001-021 | Detailed risk assessment

Table 7: 21-10 White House Farm with associated former tanks baseline CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
White House Farm with tanks Fuels, oils, pesticides, fertilisers and a range of other organic and inorganic contaminants	Current site users	Direct contact, ingestion and inhalation of contaminants in soil and soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in contaminated waters	Low likelihood	Minor	Low
		Inhalation of volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Controlled waters - Secondary B bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Secondary B aquifer	Low likelihood	Minor	Low
	Controlled waters - drain -ponds	Lateral migration of contaminants in groundwater and discharge to surface waters as base flow	Low likelihood	Minor	Low
		Direct run-off from site	Unlikely	Minor	Very low
	Property - buildings, infrastructure, their foundations and services	Direct contact of property with contaminants in soil and surface water/groundwater	Low likelihood	Negligible	Very low
Main risk					Low risk

Description

White House Farm lies in the western area required to construct the Proposed Scheme where the Proposed Scheme will be constructed in cutting. There were tanks present at the farm until the late 1970s and some of the farmstead buildings will be demolished as part of the construction phase to facilitate the cutting earthworks. A realistic and worst-case scenario has been assumed that the tanks stored fuel and oil and have leaked, with residual contamination present in the soil and groundwater. Potential contaminants associated with the farm include pesticides/chemicals, oils and fuels and contaminants associated with the former tanks include fuels and oils. There are residential properties at the farm. There is a drain and several ponds adjacent to and within 250m of the premises. The underlying bedrock is classified as a Secondary B aquifer.

Note

The former tanks (present on the farm) and the farmstead have been considered as one contamination source.

Table 8: 21-10 White House Farm with associated former tanks construction CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at construction with mitigation
White House Farm Fuels, oils, pesticides, fertilisers and a range of other organic and inorganic contaminants	Current site users	Direct contact, ingestion and inhalation of contaminants in soil and soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in contaminated waters	Low likelihood	Minor	Low
		Inhalation of volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Controlled waters - Secondary B bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Secondary B aquifer	Likely	Minor	Moderate/low
	Controlled waters - drain -ponds	Lateral migration of contaminants in groundwater and discharge to surface waters as base flow	Likely	Minor	Moderate/low
	Property - buildings, infrastructure, their foundations and services	Direct run-off from site	Low likelihood	Minor	Low
		Direct contact of property with contaminants in soil and surface water/groundwater	Low likelihood	Negligible	Very low
Main risk					Moderate/low risk

The above risk assessment assumes that the below mitigation measures will be applied during construction:

- a ground investigation will be required prior to construction because the site lies within the area required to construct the Proposed Scheme;
- it is unlikely that remediation over and above the removal of contaminated material, if encountered, will be required;
- during construction standard mitigation procedures will be in place in accordance with the CoCP.

Note

Construction workers have not been included in this assessment. It is understood that some on-site properties at the farmstead will be demolished. There may be an increased risk to groundwater during construction because of the increased potential for mobilisation and leaching of existing contamination.

Appendix LQ-001-021 | Detailed risk assessment

Table 9: 21-10 White House Farm with associated former tanks post-construction CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction with mitigation
White House Farm	Current site users	Direct contact, ingestion and inhalation of contaminants in soil and soil-derived dust	Low likelihood	Minor	Low
Fuels, oils, pesticides, fertilisers and a range of other organic and inorganic contaminants		Direct contact and ingestion of contaminants in contaminated waters	Low likelihood	Minor	Low
		Inhalation of volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Controlled waters - Secondary B bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Secondary B aquifer	Low likelihood	Minor	Low
	Controlled waters - drain - ponds	Lateral migration of contaminants in groundwater and discharge to surface waters as base flow	Low likelihood	Minor	Low
		Direct run-off from site	Unlikely	Minor	Very low
	Property - buildings, infrastructure, their foundations and services	Direct contact of property with contaminants in soil and surface water/groundwater	Low likelihood	Negligible	Very low
Main risk					Low risk

Note

Some of the farmstead buildings will be demolished and any contamination encountered will have been removed. However, some contamination may remain undisturbed outside the area required to construct the Proposed Scheme. Although some contamination may be removed during construction the majority of the farmstead will remain so there is unlikely to be any discernible overall change to the land quality present at baseline.

Table 10: 21-10 White House Farm with associated former tank significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of on-site human receptors to contamination by direct contact, ingestion and inhalation of contaminants in soil and soil-derived dust	Low	Low	Low	Negligible	Negligible
Exposure of on-site human receptors by direct contact and ingestion of contaminated waters	Low	Low	Low	Negligible	Negligible
Exposure of on-site humans to contamination by inhalation of volatile vapours from contaminated soil/water	Low	Low	Low	Negligible	Negligible
Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Secondary B aquifer	Low	Moderate/low	Low	Minor adverse	Negligible
Lateral migration of contaminants in groundwater and discharge to surface waters as base flow	Low	Moderate/low	Low	Minor adverse	Negligible
Discharge of contaminants to surface water by direct run-off from site	Very low	Low	Very low	Minor adverse	Negligible
Direct contact of property with contaminants in soil and surface water/groundwater	Very low	Very low	Very low	Negligible	Negligible
Main risk	Low	Moderate/low	Low		
Overall significance				Negligible to minor adverse	Negligible

Appendix LQ-001-021 | Detailed risk assessment

Table 11: 21-11 Buck's Head Farm with associated former tank baseline CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Buck's Head Farm with former tank Fuels, oils, pesticides, fertilisers and a range of other organic and inorganic contaminants and fuels/oils from the former tank.	Current site users	Direct contact, ingestion and inhalation of contaminants in soil and soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in contaminated waters	Unlikely	Minor	Very low
		Inhalation of volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Off-site residents	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Controlled waters - Principal bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Principal aquifer	Low likelihood	Minor	Low
	Controlled waters - drain -ponds	Lateral migration of contaminants in groundwater and discharge to surface waters as base flow	Low likelihood	Minor	Low
		Direct run-off from site	Unlikely	Minor	Very low
	Property - buildings, infrastructure, their foundations and services	Direct contact of property with contaminants in soil and surface water/groundwater	Low likelihood	Negligible	Very low
Main risk					Low risk

Description

Buck's Head Farm lies on the route of the Proposed Scheme which will be constructed in cutting. There was a tank present on the site until the late 1960s and the majority of the farmstead buildings are being demolished as part of the Proposed Scheme. Potential contaminants associated with the farm include pesticides/chemicals, oils and fuels and contaminants associated with the former tank include fuels and oils. There are residential properties and building structures adjacent to and within 250m of the premises. There are several ponds and surface water drains adjacent to and within 250m of the site. The underlying bedrock is classified as a Principal aquifer.

Table 12: 21-11 Buck's Head Farm with associated former tank construction CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at construction with mitigation
Buck's Head Farm with former tank Fuels, oils, pesticides, fertilisers and a range of other organic and inorganic contaminants and fuels/oils from the former tank.	Current site users	Direct contact, ingestion and inhalation of contaminants in soil and soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in contaminated waters	Unlikely	Minor	Very low
		Inhalation of volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Off-site residents	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Controlled waters - Principal bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Principal aquifer	Likely	Minor	Moderate/low
	Controlled waters - drain - ponds	Lateral migration of contaminants in groundwater and discharge to surface waters as base flow	Likely	Minor	Moderate/low
		Direct run-off from site	Low likelihood	Minor	Low
	Property - buildings, infrastructure, their foundations and services	Direct contact of property with contaminants in soil and surface water/groundwater	Low likelihood	Negligible	Very low
Main risk					Moderate/low risk

The above risk assessment assumes that the below mitigation measures will be applied during construction:

- a ground investigation will be required prior to construction because the cutting earthworks will encroach on the farmstead;
- it is unlikely that remediation over and above the removal of contaminated material, if encountered, will be required;
- during construction standard mitigation procedures will be in place in accordance with the CoCP.

Note

Construction workers have not been included in this assessment. It is understood that many of the existing farmstead properties will be demolished. There may be an increased risk to groundwater during construction due to the increased potential for mobilisation and leaching of existing contamination.

Table 13: 21-11 Buck's Head Farm with associated former tank post-construction CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction with mitigation
Buck's Head Farm with former tank Fuels, oils, pesticides, fertilisers and a range of other organic and inorganic contaminants and fuels/oils from the former tank.	Current site users	Direct contact, ingestion and inhalation of contaminants in soil and soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in contaminated waters	Unlikely	Minor	Very low
		Inhalation of volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Off-site residents	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Unlikely	Minor	Very low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water	Unlikely	Minor	Very low
	Controlled waters - Principal Bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Principal aquifer	Unlikely	Minor	Very low
	Controlled waters - drain -ponds	Lateral migration of contaminants in groundwater and discharge to surface waters as base flow	Unlikely	Minor	Very low
		Direct run-off from site	Unlikely	Minor	Very low
	Property - buildings, infrastructure, their foundations and services	Direct contact of property with contaminants in soil and surface water/groundwater	Unlikely	Negligible	Very low
Main risk					Low risk

Note

Much of the farmstead will be demolished so any contamination encountered will have been removed.

Table 14: 21-11 Buck's Head Farm with associated tank significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of on-site human receptors to contamination by direct contact, ingestion and inhalation of contaminants in soil and soil-derived dust	Low	Low	Low	Negligible	Negligible
Exposure of on-site human receptors by direct contact and ingestion of contaminated waters	Very low	Very low	Very low	Negligible	Negligible
Exposure of on-site humans to contamination by inhalation of volatile vapours from contaminated soil/water	Low	Low	Low	Negligible	Negligible
Exposure of adjacent human receptors (residents) to contamination by direct contact, ingestion and inhalation of contaminants in windblown, soil-derived dust	Low	Low	Very low	Negligible	Minor beneficial
Exposure of adjacent human receptors (residents) to contamination by direct contact and ingestion of contaminants in migrating contaminated water	Very low	Very low	Very low	Negligible	Negligible
Exposure of adjacent human receptors (residents) to contamination by inhalation of migrating volatile vapours from contaminated soil/water	Low	Low	Very low	Negligible	Minor beneficial
Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Principal aquifer	Low	Moderate/low	Very low	Minor adverse	Minor beneficial
Lateral migration of contaminants in groundwater and discharge to surface waters as base flow	Low	Moderate/low	Very low	Minor adverse	Minor beneficial
Discharge of contaminants to surface water by direct run-off from site	Very low	Low	Very low	Minor adverse	Negligible
Direct contact of property with contaminants in soil and surface water/groundwater	Very low	Very low	Very low	Negligible	Negligible
Main risk	Low	Moderate/low	Low		
Overall significance				Negligible to minor adverse	Negligible to minor beneficial

Appendix LQ-001-021 | Detailed risk assessment

Table 15: 21-12 Packington Moor Farm with former sheep dip baseline CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Packington Moor Farm with sheep dip Fuels, oils, pesticides, fertilisers and a range of other organic and inorganic contaminants	Current site users (commercial)	Direct contact, ingestion and inhalation of contaminants in soil and soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in contaminated waters	Unlikely	Minor	Very low
		Inhalation of volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	On-site residents	Direct contact, ingestion and inhalation of contaminants in soil and soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in contaminated waters	Unlikely	Minor	Very low
		Inhalation of volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Controlled waters - Principal bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Principal aquifer	Low likelihood	Minor	Low
	Property - buildings, infrastructure, their foundations and services	Direct contact of property with contaminants in soil and surface water/groundwater	Low likelihood	Negligible	Very low
Main risk					Low risk

Description

Packington Moor Farm lies on the route of the Proposed Scheme which will be constructed in cutting. There was a former sheep dip located at the farm until the late 1960s and the majority of the farm is being demolished as part of the construction phase with the exception of the residential property. Potential contaminants associated with both the farm and former sheep dip include fuel, oils and pesticides/other inorganic chemicals. There is a residential property associated with the farm. There are no watercourses within 250m of the site. The underlying bedrock is classified as a Principal aquifer.

Note

The former sheep dip was present on the farm and together with the sources listed, have been treated as one contamination source.

Table 16: 21-12 Packington Moor Farm with former sheep dip construction CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at construction with mitigation
Packington Moor Farm with sheep dip Fuels, oils, pesticides, fertilisers and a range of other organic and inorganic contaminants	Current site users	Direct contact, ingestion and inhalation of contaminants in soil and soil-derived dust	Not present during construction		
		Direct contact and ingestion of contaminants in contaminated waters	Not present during construction		
		Inhalation of volatile vapours from contaminated soil/water	Not present during construction		
	On-site residents	Direct contact, ingestion and inhalation of contaminants in soil and soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in contaminated waters	Unlikely	Minor	Very low
		Inhalation of volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Controlled waters - Principal bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Principal aquifer	Likely	Minor	Moderate/low
	Property - buildings, infrastructure, their foundations and services	Direct contact of property with contaminants in soil and surface water/groundwater	Low likelihood	Negligible	Very low
Main risk					
Moderate/low risk					

The above risk assessment assumes that the below mitigation measures will be applied during construction:

- a ground investigation is likely to be required prior to construction because the site will be intersected by the Proposed Scheme in cutting,
- it is unlikely that remediation over and above the removal of contaminated material, if encountered, will be required;
- during construction standard mitigation procedures will be in place in accordance with the CoCP.

Note

Construction workers have not been included in this assessment. It is understood that the majority of on-site properties will be demolished. There may be an increased risk to groundwater during construction due to the increased potential for mobilisation and leaching of existing contamination.

Appendix LQ-001-021 | Detailed risk assessment

Table 17: 21-12 Packington Moor Farm with former sheep dip post-construction CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction with mitigation
Packington Moor Farm with sheep dip	Current site users Fuels, oils, pesticides, fertilisers and a range of other organic and inorganic contaminants	Direct contact, ingestion and inhalation of contaminants in soil and soil-derived dust	Not present during construction		
		Direct contact and ingestion of contaminants in contaminated waters	Not present during construction		
		Inhalation of volatile vapours from contaminated soil/water	Not present during construction		
		Direct contact, ingestion and inhalation of contaminants in soil and soil-derived dust	Unlikely	Minor	Very low
		Direct contact and ingestion of contaminants in contaminated waters	Unlikely	Minor	Very low
		Inhalation of volatile vapours from contaminated soil/water	Unlikely	Minor	Very low
	Controlled waters - Principal bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Principal aquifer	Unlikely	Minor	Very low
	Property - buildings, infrastructure, their foundations and services	Direct contact of property with contaminants in soil and surface water/groundwater	Unlikely	Negligible	Very low
Main risk					Very low risk

Note

The majority of the buildings at the farmstead are being demolished so contamination encountered during earthworks will have been removed.

Table 18: 21-12 Packington Moor Farm with former sheep dip significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of on-site human receptors to contamination by direct contact, ingestion and inhalation of contaminants in soil and soil-derived dust	Low	Not present during construction	Not present during construction	NA	NA
Exposure of on-site human receptors by direct contact and ingestion of contaminated waters	Very low	Not present during construction	Not present during construction	NA	NA
Exposure of on-site humans to contamination by inhalation of volatile vapours from contaminated soil/water	Low	Not present during construction	Not present during construction	NA	NA
Exposure of on-site human receptors (residents) to contamination by direct contact, ingestion and inhalation of contaminants in windblown, soil-derived dust	Low	Low	Very low	Negligible	Minor beneficial
Exposure of on-site human receptors (residents) to contamination by direct contact and ingestion of contaminants in migrating contaminated water	Very low	Very low	Very low	Negligible	Negligible
Exposure of on-site human receptors (residents) to contamination by inhalation of migrating volatile vapours from contaminated soil/water	Low	Low	Very low	Negligible	Minor beneficial
Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Principal aquifer	Low	Moderate/low	Very low	Minor adverse	Minor beneficial
Direct contact of property with contaminants in soil and surface water/groundwater	Very low	Very low	Very low	Negligible	Negligible
Main risk	Low	Moderate/low	Very low		
Overall significance				Negligible to minor adverse	Negligible to minor beneficial

Table 19: 21-14 Garage baseline CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Garage	Current site users	Direct contact, ingestion and inhalation of contaminants in soil and soil-derived dust	Low likelihood	Minor	Low
Existing contaminants in the soils and groundwater at the source, potentially including but not limited to fuels, oils and other organic and inorganic contaminants		Direct contact and ingestion of contaminants in contaminated waters	Unlikely	Minor	Very low
		Inhalation of volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Users of off-site commercial properties	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Unlikely	Negligible	Very low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Negligible	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water.	Low likelihood	Minor	Low
	Controlled waters - Principal bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Principal aquifer	Low likelihood	Minor	Low
	Property - buildings, infrastructure, their foundations and services	Direct contact of property with contaminants in soil and surface water/groundwater	Low likelihood	Negligible	Very low
Main risk					Low risk

Description

The garage is located within the eastern area required to construct the Proposed Scheme which will be constructed in cutting. The garage will be demolished and used as part of the cutting works and for soft landscaping. A realistic and worst-case assumption has been made that there have been oil/fuel leaks at the garage and that contamination is present in the soil and groundwater. There are no residential properties within 250m of the garage but there are commercial properties associated with the golf course and Whittington Barracks. There are no surface water receptors within 250m of the garage. Bedrock underlying the site is classified as a Principal aquifer.

Table 20: 21-14 Garage construction CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at construction with mitigation
Garage Existing contaminants in the soils and groundwater at the source, potentially including but not limited to fuels, oils and other organic and inorganic contaminants	Current site users	Direct contact, ingestion and inhalation of contaminants in soil and soil-derived dust	Not present during construction		
		Direct contact and ingestion of contaminants in contaminated waters	Not present during construction		
		Inhalation of volatile vapours from contaminated soil/water	Not present during construction		
	Users of off-site commercial properties	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Unlikely	Minor	Very low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water.	Low likelihood	Minor	Low
	Controlled waters - Principal bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Principal aquifer	Likely	Minor	Moderate/low
	Property - buildings, infrastructure, their foundations and services	Direct contact of property with contaminants in soil and surface water/groundwater	Low likelihood	Negligible	Very low
Main risk					
Moderate/low					

The above risk assessment assumes that the below mitigation measures will be applied during construction:

- a ground investigation is likely to be required prior to construction;
- it is unlikely that remediation over and above the removal of contaminated material, if encountered, will be required;
- during construction standard mitigation procedures will be in place in accordance with the CoCP.

Note

Construction workers have not been included in this assessment. It is understood that the garage will be demolished so the on-site receptors at baseline will no longer be present. It is considered that there may be a slightly increased risk of mobilisation and leaching of existing contamination to groundwater during construction.

Appendix LQ-001-021 | Detailed risk assessment

Table 21: 21-14 Garage post-construction CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction with mitigation
Garage	Current site users	Direct contact, ingestion and inhalation of contaminants in soil and soil-derived dust	Not present during post-construction		
Existing contaminants in the soils and groundwater at the source, potentially including but not limited to fuels, oils and other organic and inorganic contaminants		Direct contact and ingestion of contaminants in contaminated waters	Not present during post-construction		
		Inhalation of volatile vapours from contaminated soil/water	Not present during post-construction		
	Users of off-site commercial properties	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Unlikely	Negligible	Very low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Negligible	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water.	Unlikely	Minor	Very low
	Controlled waters - Principal bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Principal aquifer	Unlikely	Minor	Very low
	Property - buildings, infrastructure, their foundations and services	Direct contact of property with contaminants in soil and surface water/groundwater	Unlikely	Negligible	Very low
Main risk					Very low risk

Note

It is assumed that any contaminated material will be removed during construction so there should be no residual contamination.

Table 22: 21-14 Garage significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of on-site human receptors to contamination by direct contact, ingestion and inhalation of contaminants in soil and soil-derived dust	Low	Not present during construction	Not present during post-construction	n/a	n/a
Exposure of on-site human receptors by direct contact and ingestion of contaminated waters	Very low	Not present during construction	Not present during post-construction	n/a	n/a
Exposure of on-site humans to contamination by inhalation of volatile vapours from contaminated soil/water	Low	Not present during construction	Not present during post-construction	n/a	n/a
Exposure of adjacent human receptors (in commercial properties) to contamination by direct contact, ingestion and inhalation of contaminants in windblown, soil-derived dust	Very low	Very low	Very low	Negligible	Negligible
Exposure of adjacent human receptors (in commercial properties) to contamination by direct contact and ingestion of contaminants in migrating contaminated water	Very low	Very low	Very low	Negligible	Negligible
Exposure of adjacent human receptors (in commercial properties) to contamination by inhalation of migrating and volatile vapours from contaminated soil/water	Low	Low	Very low	Negligible	Minor beneficial
Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Principal aquifer	Low	Moderate/low	Very low	Minor adverse	Minor beneficial
Direct contact of property with contaminants in soil and surface water/groundwater	Very low	Very low	Very low	Negligible	Negligible
Main risk	Low	Moderate/low	Very low		
Overall significance				Negligible to minor adverse	Negligible to minor beneficial

Appendix LQ-001-021 | Detailed risk assessment

Table 23: 21-15 Whittington Heath baseline CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation					
Whittington Heath Existing contaminants in the soil and groundwater at the site, potentially including but not limited to fuels, oils, solvents, degreasers, metals, asbestos, ordinance, explosives residues.	On-site users of commercial properties	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low					
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low					
		Inhalation of migrating volatile vapours from contaminated soil/water	Low likelihood	Minor	Low					
	Off-site residents	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low					
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low					
		Inhalation of migrating volatile vapours from contaminated soil/water	Low likelihood	Minor	Low					
	Controlled waters - Principal bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in Principal bedrock aquifer	Low likelihood	Minor	Low					
	Controlled waters - unnamed stream - ponds	Lateral migration of contaminants in groundwater and discharge as base flow	Unlikely	Minor	Very low					
		Direct run-off from site	Unlikely	Minor	Very low					
	Property - buildings, infrastructure, their foundations and services	Direct contact of property with contaminants in soil and surface water/groundwater	Low likelihood	Negligible	Very low					
Main risk	Low risk									
Description										
Whittington Heath is situated immediately to the north of the Drayton Bassett, Hints and Weeford CFA within the Whittington to Handsacre CFA. However, as the Drayton Bassett, Hints and Weeford study area encroaches into this area Whittington Heath is assessed in both areas. The Proposed Scheme will enter Whittington Heath in cutting. The land may have been used for military training exercises. There are residential and commercial properties within 250m of Whittington Heath and the nearest surface waters include an unnamed stream approximately 130m south east of the site and ponds at various locations up to 250m from the Heath. There are no superficial deposits recorded at the site and the underlying bedrock is classified as a Principal aquifer.										

Table 24: 21-15 Whittington Heath construction CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at construction with mitigation
Whittington Heath Existing contaminants in the soil and groundwater at the site, potentially including but not limited to fuels, oils, solvents, degreasers, metals, asbestos, ordinance, explosives residues.	On-site users of commercial properties	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Off-site residents	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Controlled waters - Principal bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in Principal bedrock aquifer	Likely	Minor	Moderate/low
	Controlled waters - unnamed stream - ponds	Lateral migration of contaminants in groundwater and discharge as base flow	Unlikely	Minor	Very low
		Direct run-off from site	Unlikely	Minor	Very low
	Property - buildings, infrastructure, their foundations and services	Direct contact of property with contaminants in soil and surface water/groundwater	Low likelihood	Negligible	Very low
Main risk	Moderate/low risk				

The above risk assessment assumes that the below mitigation measures would be applied during construction:

- as the Heath lies on and in the area of land required to build the Proposed Scheme it will likely be disturbed;
- it is unlikely that remediation over and above the removal of contaminated material would be required; and
- during construction standard mitigation procedures will be in place in accordance with the CoCP.

Note

Construction workers have not been included in this assessment.

Table 25: 21-15 Whittington Heath post-construction CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction with mitigation
Whittington Heath Existing contaminants in the soil and groundwater at the site, potentially including but not limited to fuels, oils, solvents, degreasers, metals, asbestos, ordinance, explosives residues.	On-site users of commercial properties	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Off-site residents	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Controlled waters - Principal bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in Principal bedrock aquifer	Low likelihood	Minor	Low
	Controlled waters - unnamed stream - ponds	Lateral migration of contaminants in groundwater and discharge as base flow	Unlikely	Minor	Very low
		Direct run-off from site	Unlikely	Minor	Very low
	Property - buildings, infrastructure, their foundations and services	Direct contact of property with contaminants in soil and surface water/groundwater	Low likelihood	Negligible	Very low
Main risk	Low risk				

Note

Should any contamination have been encountered during construction this will have been removed. However, the Heath will largely remain as the baseline situation.

Table 26: 21-15 Whittington Heath significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of on-site human receptors (commercial) to contamination by direct contact, ingestion and inhalation of contaminants in windblown, soil-derived dust	Low	Low	Low	Negligible	Negligible
Exposure of on-site human receptors (commercial) to contamination by direct contact and ingestion of contaminants in migrating contaminated water	Very low	Very low	Very low	Negligible	Negligible
Exposure of on-site human receptors (commercial) to contamination by inhalation of migrating volatile vapours from contaminated soil/water	Low	Low	Low	Negligible	Negligible
Exposure of adjacent human receptors (residential) to contamination by direct contact, ingestion and inhalation of contaminants in windblown, soil-derived dust	Low	Low	Low	Negligible	Negligible
Exposure of adjacent human receptors (residential) to contamination by direct contact and ingestion of contaminants in migrating contaminated water	Very low	Very low	Very low	Negligible	Negligible
Exposure of adjacent human receptors (residential) to contamination by inhalation of migrating volatile vapours from contaminated soil/water	Low	Low	Low	Negligible	Negligible
Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Principal bedrock aquifer	Low	Moderate/low	Low	Minor adverse	Negligible
Lateral migration of contaminants in groundwater and discharge to surface waters as base flow	Very low	Very low	Very low	Negligible	Negligible
Discharge of contaminants to surface water by direct run-off from site	Very low	Very low	Very low	Negligible	Negligible
Direct contact of property with contaminants in soil and surface water/groundwater	Very low	Very low	Very low	Negligible	Negligible
Main risk	Low	Moderate/low	Low		
Overall significance				Negligible – minor adverse	Negligible

Table 27: 21-15 Whittington Barracks baseline CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Whittington Barracks Existing contaminants in the soil and groundwater at the site, potentially including but not limited to fuels, oils, solvents, degreasers, metals, asbestos, ordnance, explosives residues.	On-site residents	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	On-site commercial	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Off-site residents	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Off-site commercial	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Controlled waters - Principal bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in Principal bedrock aquifer	Low likelihood	Minor	Low

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
	Controlled waters - surface watercourses	Lateral migration of contaminants in groundwater and discharge as base flow	Unlikely	Minor	Very low
		Direct run-off from site	Unlikely	Minor	Very low
	Property - buildings, infrastructure, their foundations and services	Direct contact of property with contaminants in soil and surface water/groundwater	Low likelihood	Negligible	Very low
Main risk	Low risk				

Description

Whittington Barracks is situated immediately to the north of the Drayton Bassett, Hints and Weeford CFA within the Whittington to Handsacre CFA. However, as the Drayton Bassett, Hints and Weeford study area encroaches into this area Whittington Barracks is assessed in both areas. Whittington Barracks is situated adjacent and up to 250m east of the area of land required to construct the Proposed Scheme, which would be constructed in cutting and on embankment. A range of contaminants are associated with the land. There are residential and commercial properties within 250m and the nearest surface waters include an unnamed stream which flows along the southern edge of the site and ponds which are situated up to 250m from the site. There are no superficial deposits recorded at the site and the underlying bedrock is classified as a Principal aquifer.

Table 28: 21-15 Whittington Barracks construction CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at construction with mitigation
Whittington Barracks	On-site residents	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
Existing contaminants in the soils and groundwater at the site, potentially including but not limited to fuels, oils, metals and asbestos.		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	On-site commercial	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Off-site residents	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Off-site commercial	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Controlled waters - Principal bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in Principal bedrock aquifer	Low likelihood	Minor	Low

Source	Receptor	Pathway	Probability	Consequence	Risk at construction with mitigation
	Controlled waters - surface watercourses	Lateral migration of contaminants in groundwater and discharge as base flow	Unlikely	Minor	Very low
		Direct run-off from site	Unlikely	Minor	Very low
	Property - buildings, infrastructure, their foundations and services	Direct contact of property with contaminants in soil and surface water/groundwater	Low likelihood	Negligible	Very low
Main risk	Low risk				

The above risk assessment assumes that the below mitigation measures will be applied during construction:

- as the Barracks lie outside of the area of land required to construct the Proposed Scheme, it is unlikely that it will be disturbed during construction;
- the committed redevelopment of the Barracks includes the remediation of hot spots of contamination; and
- during construction standard mitigation procedures will be in place in accordance with the CoCP.

Note

Construction workers have not been included in this assessment.

Table 29: 21-15 Whittington Barracks post-construction CSM and qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction with mitigation
Whittington Barracks Existing contaminants in the soils and groundwater at the site, potentially including but not limited to fuels, oils, metals and asbestos.	On-site residents	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	On-site commercial	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Off-site residents	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water	Low likelihood	Minor	Low
	Off-site commercial	Direct contact, ingestion and inhalation of contaminants in windblown soil-derived dust	Low likelihood	Minor	Low
		Direct contact and ingestion of contaminants in migrating contaminated waters	Unlikely	Minor	Very low
		Inhalation of migrating volatile vapours from contaminated soil/water	Low likelihood	Minor	Low

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction with mitigation
	Controlled waters - Principal bedrock aquifer	Leaching of contaminants from soil to groundwater and vertical and lateral migration in Principal bedrock aquifer	Low likelihood	Medium	Low
	Controlled waters - surface watercourses	Lateral migration of contaminants in groundwater and discharge as base flow	Unlikely	Minor	Very low
		Direct run-off from site	Unlikely	Minor	Very low
	Property - buildings, infrastructure, their foundations and services	Direct contact of property with contaminants in soil and surface water/groundwater	Low likelihood	Negligible	Very low
Main risk	Low risk				

Note

The Barracks will remain post construction and so risks remain same as at baseline.

Appendix LQ-001-021 | Detailed risk assessment

Table 30: 21-15 Whittington Barracks significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of on-site human receptors (residents) to contamination by direct contact, ingestion and inhalation of contaminants in windblown, soil-derived dust	Low	Low	Low	Negligible	Negligible
Exposure of on-site human receptors (residents) to contamination by direct contact and ingestion of contaminants in migrating contaminated water	Very low	Very low	Very low	Negligible	Negligible
Exposure of on-site human receptors (residents) to contamination by inhalation of migrating volatile vapours from contaminated soil/water	Low	Low	Low	Negligible	Negligible
Exposure of on-site human receptors (commercial) to contamination by direct contact, ingestion and inhalation of contaminants in windblown, soil-derived dust	Low	Low	Low	Negligible	Negligible
Exposure of on-site human receptors (commercial) to contamination by direct contact and ingestion of contaminants in migrating contaminated water	Very low	Very low	Very low	Negligible	Negligible
Exposure of on-site human receptors (commercial) to contamination by inhalation of migrating volatile vapours from contaminated soil/water	Low	Low	Low	Negligible	Negligible
Exposure of off-site human receptors (residents) to contamination by direct contact, ingestion and inhalation of contaminants in windblown, soil-derived dust	Low	Low	Low	Negligible	Negligible
Exposure of off-site human receptors (residents) to contamination by direct contact and ingestion of contaminants in migrating contaminated water	Very low	Very low	Very low	Negligible	Negligible
Exposure of off-site human receptors (residents) to contamination by inhalation of migrating volatile vapours from contaminated soil/water	Low	Low	Low	Negligible	Negligible
Exposure of off-site human receptors (commercial) to contamination by direct contact, ingestion and inhalation of contaminants in windblown, soil-derived dust	Low	Low	Low	Negligible	Negligible
Exposure of off-site human receptors (commercial) to contamination by direct contact and ingestion of contaminants in migrating contaminated water	Very low	Very low	Very low	Negligible	Negligible
Exposure of off-site human receptors (commercial) to contamination by inhalation of migrating volatile vapours from contaminated soil/water	Low	Low	Low	Negligible	Negligible
Leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater in Principal bedrock aquifer	Low	Low	Low	Negligible	Negligible
Lateral migration of contaminants in groundwater and discharge to surface waters as base flow	Very low	Very low	Very low	Negligible	Negligible

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Discharge of contaminants to surface water by direct run-off from site	Very low	Very low	Very low	Negligible	Negligible
Direct contact of property with contaminants in soil and surface water/groundwater	Very low	Very low	Very low	Negligible	Negligible
Main risk	Low	Low	Low		
Overall significance				Negligible	Negligible

4 Inspections notes and other site data

4.1.1 There were no sites identified as a priority for inspection in the Drayton Bassett, Hints and Weeford study area.

5 Geological SSSI and local geological sites

5.1.1 This appendix presents the following data:

- citation data for geological SSSI;
- citation data for local geological sites (LGS), formerly called regionally important geological sites (RIGS); and
- any other relevant site data.

5.1.2 There are no geological SSSI or local geological sites in the Drayton Bassett, Hints and Weeford study area.

6 Mining and minerals data

6.1.1 This appendix presents the following data relating to mining and minerals information:

- details of planning data for minerals sites;
- lists of marl pits in each study area; and
- data from The Coal Authority.

6.1.2 There are no relevant mining sites or additional relevant mineral data for the Drayton Bassett, Hints and Weeford study area.